

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Masahiro ISHIYAMA et al.)	Group Art Unit: 2446
)	
Application No.: 10/671,738)	Examiner: Farhad ALI
)	
Filed: September 29, 2003)	
)	
For: NAME RESOLUTION DEVICE AND)	Confirmation No.: 6750
NAME RESOLUTION METHOD WITH)	
AUTOMATIC NODE INFORMATION)	
UPDATING FUNCTION)	

Attention: Mail Stop Appeal Brief-Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF UNDER BOARD RULE § 41.37

In support of the Notice of Appeal filed July 6, 2010, and further to Board Rule 41.37, Appellants present this brief and enclose herewith the fee of \$540.00 required under 37 C.F.R. § 41.20(b)(2).

This Appeal Brief is being filed concurrently with a petition for an Extension of Time for one month, and the appropriate fee.

This Appeal responds to the January 5, 2010, final rejection of claims 1, 2, 4-8, 10-14, and 16-18, and to the Advisory Action dated June 22, 2010.

If any additional fees are required or if the enclosed payment is insufficient, Appellants request that the required fees be charged to Deposit Account 06-0916.

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Real Party In Interest

Kabushiki Kaisha Toshiba is the real party in interest, as indicated by an Assignment filed on February 18, 2004.

Related Appeals and Interferences

There are currently no other appeals or interferences, of which Appellants, Appellants' legal representative, or assignee are aware, that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status Of Claims

Claims 1, 2, 4-8, 10-14, and 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,185,860 to Wu ("Wu") in view of U.S. Patent No. 6,101,499 to Ford et al. ("Ford"), and further in view of U.S. Patent No. 6,747,961 to Ahmed ("Ahmed"). The rejection of claims 1, 2, 4-8, 10-14, and 16-18 is being appealed.

Pursuant to 37 C.F.R. § 41.37(c)(1)(viii), a listing of the claims under appeal is listed in the attached Claims Appendix.

Status Of Amendments

No claim amendments were filed after the Final Office Action was mailed January 5, 2010. All prior claim amendments have been entered.

Summary Of Claimed Subject Matter

Regarding the claims on appeal, claim 1 is drawn to a name resolution device for managing a name of each node which is connected to a network and whose position on the network can be changed, and an address for identifying each node. *See, e.g.,* Fig. 1, p. 3, ll. 24-28. The name resolution device includes a node information storing unit configured to store a node information containing a name of a node, a network identification information, a prefix indicating a position of a node on the network, and an interface identification information of a node, for each node (*see, e.g.,* Fig. 3; p. 7, l. 30 - p. 8, l. 4); a node information collecting unit configured to collect the node information of other nodes connected to the network, through the network (*see, e.g.,* p. 8, ll. 18-21); a node information updating unit configured to update the node information stored in the node information storing unit, according to the node information of the other nodes collected by the node information collecting unit, by updating the prefix stored in the node information storing unit by using the interface identification information contained in the node information collected by the node information collecting unit as a key (*see, e.g.,* Fig. 5; p. 8, l. 31 - p. 9, l. 25); a function conversion unit configured to convert the interface identification information corresponding to a prescribed node among the node information stored in the node information storing unit, by using a one-way function (*see, e.g.,* p. 11, ll. 11-13); a comparing unit configured to, under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored in the node information storing unit, compare the interface identification information converted by using the one way function which is

received from another node, with the interface identification information as converted by the function conversion unit, in order to allow the another node to obtain the prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored in the node information storing unit (see, e.g., Figs. 7-8, p. 10, l. 25 - p. 11, l. 26); and a node information providing unit configured to provide the prefix corresponding to the interface identification information compared by the comparing unit to the another node, but without the interface identification information, only when it is judged that the converted interface identification information from the function conversion unit coincides with the converted interface identification information from the another node at the comparing unit. See, e.g., p. 12, ll. 15-18.

Claim 7 is drawn to a name resolution method for managing a name of each node which is connected to a network and whose position on the network can be changed, and an address for identifying each node. The method comprises: storing a node information containing a name of a node, a network identification information, a prefix indicating a position of a node on the network, and an interface identification information of a node, for each node (see, e.g., Fig. 3; p. 7, l. 30 - p. 8, l. 4); collecting the node information of other nodes connected to the network, through the network (see, e.g., p. 8, ll. 18-21); updating the node information stored by the storing, according to the node information of the other nodes collected by the collecting, by updating the prefix stored by the storing by using the interface identification information contained in the node information collected by the collecting as a key (see, e.g., Fig. 5; p. 8, l. 31 - p. 9, l. 25); converting the interface identification information corresponding to a prescribed node among the node information stored by the storing, by using a one

way function; (*see, e.g.,* p. 11, ll. 11-13) under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing, comparing the interface identification information converted by using the one way function which is received from the another node, with the interface identification information as converted by the converting, in order to allow the another node to obtain the prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing; (*see, e.g.,* Figs. 7-8, p. 10, l. 25 - p. 11, l. 26) and providing the prefix corresponding to the interface identification information compared by the comparing to the another node, but without the interface identification information, only when it is judged that the converted interface identification information coincides with the converted interface identification information from the another node at the comparing. *See, e.g.,* p. 12, ll. 15-18.

Claim 13 is drawn to a computer-readable medium having computer-executable instructions for performing a method for causing a computer to function as a name resolution device for managing a name of each node which is connected to a network and whose position on the network can be changed, and an address for identifying each node. The method comprises: storing a node information containing a name of a node, a network identification information, a prefix indicating a position of a node on the network, and an interface identification information of a node, for each node (*see, e.g.,* Fig. 3; p. 7, l. 30 - p. 8, l. 4); collecting the node information of other nodes connected to the network, through the network (*see, e.g.,* p. 8, ll. 18-21); updating the stored node

information according to the collected node information of the other nodes by updating the stored prefix using the interface identification information contained in the collected node information as a key (*see, e.g.*, Fig. 5; p. 8, l. 31 - p. 9, l. 25); converting the interface identification information corresponding to a prescribed node among the stored node information, by using a one way function (*see, e.g.*, p. 11, ll. 11-13); under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing, comparing the interface identification information converted by using the one way function which is received from the another node, with the converted interface identification information, in order to allow the another node to obtain the prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing (*see, e.g.*, Figs. 7-8, p. 10, l. 25 - p. 11, l. 26); and providing the prefix corresponding to the compared interface identification information to the another node, but without the interface identification information, only when it is judged that the converted interface identification information from the one way function conversion coincides with the converted interface identification information from the another node when comparing. *See, e.g.*, p. 12, ll. 15-18.

Grounds of Rejection

Claims 1, 2, 4-8, 10-14, and 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,185,860 to Wu ("Wu") in view of U.S. Patent No. 6,101,499 to Ford et al. ("Ford"), and further in view of U.S. Patent No. 6,747,961 to Ahmed ("Ahmed").

Argument

Appellants provide a brief background discussion for purposes of appeal. On the internet, each computer has an identifier called IP address, and packet exchanges are carried out based on this IP address. However, the IP address is a numerical value, which is not intuitive and is therefore not convenient for users. For this reason, a mechanism for converting the IP address into a character string that is easier to handle, i.e., a "name", has been used. Currently, the most widely utilized conversion mechanism on the internet is DNS (Domain Name System). See Appl., p. 1, ll. 22-31.

The DNS is used for a global name resolution on the internet, so that a name FQDN (Fully Qualified Domain Name) used by the DNS is uniquely defined on the internet. See *id.*, p. 1, ll. 32-34.

On the other hand, due to the spread of the internet, the need for every node to have a globally unique name is diminishing. Also, it not possible to publicly disclose a name of some node only to specific members. As a result, a malicious third person may acquire information regarding nodes, which may cause privacy problems. In addition, in order to utilize the FQDN, there is a need to provide a DNS server for managing the FQDN, which may give rise to problems with arranging, managing, registering, and running the DNS server. See *id.*, p. 1, l. 35 - p. 2, l. 13.

For a small network such as a home network, a name may be defined locally on the network and a node may be accessed using that name. However, such a technique may require a protocol for discovering the server, which reduces user convenience. See *id.*, p. 2, ll. 14-26.

It is possible to use a node local database to mitigate such problems. If an individual wishes others to have access, it is possible to inform a locally defined name

to others by exchanging address and name data directly via the local database.

However, the local database is updated manually. See *id.*, p. 2, ll. 27-35.

In IPv6, it is expected that renumbering will occur even in a small network such as a home network. In such a case, after the renumbering occurs, there arises a problem of "who should be informed of what." See *id.*, p. 3, ll. 1-19.

Accordingly, aspects of the present invention are directed to providing a name resolution method.

The Board Should Reverse the Rejection of Claims 1, 2, 4-8, 10-14, and 16-18 Under § 103(a) Because Neither *Wu*, *Ford*, nor *Ahmed*, Whether Taken Alone or In Combination, Teaches or Suggests Each and Every Recited Claim Element

Appellants respectfully traverse the rejection of claims 1, 2, 4-8, 10-14, and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,185,860 to Wu ("Wu") in view of U.S. Patent No. 6,101,499 to Ford et al. ("Ford") and U.S. Patent No. 6,747,961 to Ahmed ("Ahmed"). A *prima facie* case of obviousness has not been established.

To establish obviousness based on a combination or suggestion of prior art, "Office personnel must articulate . . . a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference." M.P.E.P. § 2143.A.

In particular, Wu, Ford, and Ahmed, whether taken alone or in combination, do not teach or suggest at least a name resolution device comprising:

a comparing unit configured to, under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of

the prescribed node, . . . compare the interface identification information converted by using the one way function which is received from another node, with the interface identification information as converted by the function conversion unit, . . . ; and

a node information providing unit configured to provide the prefix corresponding to the interface identification information compared by the comparing unit to the another node, but without the interface identification information, only when it is judged that the converted interface identification information from the function conversion unit coincides with the converted interface identification information from the another node at the comparing unit

as recited in claim 1 (emphases added).

The Examiner concedes that Wu fails to teach or suggest at least the above-listed features of claim 1. (See Final Office Action at pages 3-4.) Ford and Ahmed, taken alone or in any combination, fail to cure these acknowledged deficiencies of Wu.

Ford is completely silent regarding "a comparing unit configured to, under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, compare the interface identification information converted by using the one way function which is received from another node, with the interface identification information as converted by the function conversion unit," as required by claim 1 (emphasis added).

Further, in the Advisory Action, the Examiner argued that Ford teaches the claimed "prefix corresponding to the interface identification information . . . without the

interface identification information" in column 8, lines 11-20 of Ford. (See Advisory

Action at page 2). This portion of Ford recites:

Yet another way of consistently determining or obtaining the network identifying portion of an IP address is to use a network protocol for obtaining the information for the portion directly or indirectly from other devices attached to the network. Those skilled in the art will also appreciate that other mechanisms may also exist that would allow consistent and predictable generation of the same network identifying portion of an IP address that would work with the present invention are possible.

Ford, col. 8, ll. 11-20. (See Advisory Action at page 2).

Contrary to the Examiner's assertion, Ford fails to mention providing "the prefix corresponding to the interface identification information . . . without the interface identification information," as recited in claim 1. In fact, Ford's teaching of the generated IP address requires the IP address containing "a format indication portion, a network identifying portion, and a host identifying portion," (Ford, col. 7, ll. 12-13) which is contrary to the recited features in claim 1. The portion of Ford cited by the Examiner does not remedy the above-listed deficiencies, and instead merely discusses obtaining the "network identifying portion of an IP address....directly or indirectly from other devices attached to the network." Ford, col. 8, ll. 11-20 (emphasis added).

Ford describes "a method . . . for automatically generating an IP network address . . . without IP address servers." (Ford, Abstract.) "An IP address is divided into three portions or regions: a format indication portion, a network identifying portion, and a host identifying portion." (Ford, column 7, lines 11-13.) Further, as described in Ford:

First, a proposed IP address is generated by selecting a network identifying portion . . . while deterministically generating the host identifying portion based on information available to the IP host. For example, the IEEE 802 Ethernet address found in the network interface

card may be used with a deterministic hashing function to generate the host identifying portion of the IP address. Next, the generated IP address is tested on the network to assure that no existing IP host is using that particular IP address. If the generated IP address already exists, then a new IP address is generated.

Ford, Abstract.

That is, Ford at most teaches a method for converting interface identification information of a node by using a deterministic hash function, setting the converted interface identification information as a proposed prefix of the node, testing and setting the proposed prefix as a prefix of the node if the proposed prefix does not coincide with one of the prefixes of other nodes, and further converting the proposed prefix by using the deterministic hash function if the proposed prefix coincides with one of the prefixes of other nodes. Id.

Ahmed fails to cure the deficiencies of Wu and Ford. Instead, Ahmed teaches "mobility management issues within a packet-based multiaccess mobile communications system, which includes a plurality of mobile user stations and a plurality of network nodes Location management techniques include tracking and/or locating mobile stations within the system." (Ahmed, Abstract.) "Note that the HLRs¹ maintain the location of a mobile only through the network node it is currently attached to i.e., the direct network node. Only if the mobile's point of attachment changes, then the mobile's HLR needs to be updated. The relative movement among network nodes does not affect the mobiles' HLRs though it will invoke routing updates. If a mobile moves to another network node, it sends a location update message to its HLR." (Ahmed, column 13, lines 29-36, emphases added.)

¹ Home Location Registers. Ahmed, col. 13, l. 2.

That is, Ahmed's teaching of mobility management using HLR/VLR² requires attachment to the mobile network, and thus such teaching cannot suggest "a comparing unit configured to, under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, . . . compare the interface identification information converted by using the one way function which is received from another node, with the interface identification information as converted by the function conversion unit," as recited in claim 1 (emphasis added).

Further, Ahmed's teaching of location update messages does not constitute "a node information providing unit configured to provide the prefix corresponding to the interface identification information compared by the comparing unit to the another node, but without the interface identification information, only when it is judged that the converted interface identification information from the function conversion unit coincides with the converted interface identification information from the another node at the comparing unit," as also recited in claim 1 (emphasis added).

In the Advisory Action, the Examiner argued that Ahmed teaches in column 13, lines 35-45, "Also, a network node itself may move out of range, losing all mobiles attached to it. In this case, the mobiles will try to connect with the neighboring nodes. Depending on the availability, some mobiles may be able to connect to the neighboring nodes. To minimize the number of location update messages, each neighboring node

² Visitor Location Register. Ahmed, col. 13, l. 3.

sends location update messages to the HLRs of all the newly joined mobiles (via the internode network 108)." Advisory Action, page 2 (quoting Ahmed).

This portion of Ahmed still fails to cure the deficiencies of Wu and Ford. Ahmed's teaching of "location update messages" from "neighboring nodes" does not constitute "the prefix corresponding to the interface identification information . . . without the interface identification information," as recited in claim 1.

Therefore, Wu, Ford, and Ahmed fail to teach or suggest all claim elements of claim 1. Appellants therefore request withdrawal of the 35 U.S.C. § 103(a) rejection of claim 1. Dependent claims 2 and 4-6 should also be allowable, at least by virtue of dependence from base claim 1.

Further, independent claims 7 and 13, while of different scope, recite similar features to those of claim 1. Claims 7 and 13, and their respective dependent claims 8 and 10-12 and claims 14 and 16-18 should therefore also be allowable.

Conclusion

For the reasons given above, pending claims 1, 2, 4-8, 10-14, and 16-18 are allowable and reversal of the Examiner's rejection is respectfully requested.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to Deposit Account 06-0916.

Respectfully submitted,

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Dated: October 6, 2010

By: 

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Claims Appendix to Appeal Brief Under Rule 41.37(c)(1)(viii)

1. A name resolution device for managing a name of each node which is connected to a network and whose position on the network can be changed, and an address for identifying each node, comprising:

a node information storing unit configured to store a node information containing a name of a node, a network identification information, a prefix indicating a position of a node on the network, and an interface identification information of a node, for each node;

a node information collecting unit configured to collect the node information of other nodes connected to the network, through the network;

a node information updating unit configured to update the node information stored in the node information storing unit, according to the node information of the other nodes collected by the node information collecting unit, by updating the prefix stored in the node information storing unit by using the interface identification information contained in the node information collected by the node information collecting unit as a key;

a function conversion unit configured to convert the interface identification information corresponding to a prescribed node among the node information stored in the node information storing unit, by using a one-way function;

a comparing unit configured to, under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored in the node information storing unit, compare the interface identification information converted by using the one way function which is received from another node, with the interface identification information as converted by the function conversion unit, in order to allow the another node to obtain the prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored in the node information storing unit; and

a node information providing unit configured to provide the prefix corresponding to the interface identification information compared by the comparing unit to the another node, but without the interface identification information, only when it is judged that the converted interface identification information from the function conversion unit coincides with the converted interface identification information from the another node at the comparing unit.

2. The name resolution device of claim 1, wherein the node information updating unit updates the node information stored in the node information storing unit for which the interface identification information coincides with that of the node information collected by the node information collecting unit but the prefix does not coincide with that of the node information collected by the node information collecting unit.

3. (Cancelled)

4. The name resolution device of claim 1, wherein the function conversion unit uses a hash function as the one way function.

5. The name resolution device of claim 1, further comprising:
a prefix conversion unit configured to convert the prefix into a position identification information which is in one-to-one correspondence to the prefix;
wherein the node information storing unit stores the position identification information obtained by the prefix conversion unit, as the prefix.

6. The name resolution device of claim 1, further comprising:
an address generation unit configured to generate an IPv6 address dynamically, according to the node information stored in the node information storing unit.

7. A name resolution method for managing a name of each node which is connected to a network and whose position on the network can be changed, and an address for identifying each node, comprising:

storing a node information containing a name of a node, a network identification information, a prefix indicating a position of a node on the network, and an interface identification information of a node, for each node;

collecting the node information of other nodes connected to the network, through the network;

updating the node information stored by the storing, according to the node information of the other nodes collected by the collecting, by updating the prefix stored by the storing by using the interface identification information contained in the node information collected by the collecting as a key;

converting the interface identification information corresponding to a prescribed node among the node information stored by the storing, by using a one way function;

under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing, comparing the interface identification information converted by using the one way function which is received from the another node, with the interface identification information as converted by the converting, in order to allow the another node to obtain the prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing; and

providing the prefix corresponding to the interface identification information compared by the comparing to the another node, but without the interface identification information, only when it is judged that the converted interface identification information coincides with the converted interface identification information from the another node at the comparing.

8. The name resolution method of claim 7, wherein the updating updates the node information stored by the storing for which the interface identification information coincides with that of the node information collected by the collecting but the prefix does not coincide with that of the node information collected by the collecting.

9. (Cancelled)

10. The name resolution method of claim 7, wherein the converting uses a hash function as the one way function.

11. The name resolution method of claim 7, further comprising:
converting the prefix into a position identification information which is in one-to-one correspondence to the prefix;
wherein the storing stores the position identification information obtained by the converting, as the prefix.

12. The name resolution method of claim 7, further comprising:
generating an IPv6 address dynamically, according to the node information stored by the storing.

13. A computer-readable medium having computer-executable instructions for performing a method for causing a computer to function as a name resolution device for managing a name of each node which is connected to a network and whose position on the network can be changed, and an address for identifying each node, the method comprising:

storing a node information containing a name of a node, a network identification information, a prefix indicating a position of a node on the network, and an interface identification information of a node, for each node;

collecting the node information of other nodes connected to the network, through the network;

updating the stored node information according to the collected node information of the other nodes by updating the stored prefix using the interface identification information contained in the collected node information as a key;

converting the interface identification information corresponding to a prescribed node among the stored node information, by using a one way function;

under a condition where a prefix corresponding to the interface identification information of the prescribed node stored in another node, not connected to the network, differs from a prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing, comparing the interface identification information converted by using the one way function which is received from the another node, with the converted interface identification information, in order to allow the another node to obtain the prefix corresponding to the interface identification information of the prescribed node, shared with the another node and stored by the storing; and

providing the prefix corresponding to the compared interface identification information to the another node, but without the interface identification information, only when it is judged that the converted interface identification information from the one way function conversion coincides with the converted interface identification information from the another node when comparing.

14. The computer-readable medium of claim 13, wherein the updating includes updating the stored node information for which the interface identification information coincides with that of the collected node information but the prefix does not coincide with that of the collected node information.

15. (Cancelled).

16. The computer-readable medium of claim 13, wherein the converting uses a hash function as the one way function.

17. The computer-readable medium of claim 13, further comprising:
converting the prefix into a position identification information which is in one-to-one correspondence to the prefix;

wherein the storing includes storing the converted position identification information as the prefix.

18. The computer-readable medium of claim 13, further comprising:
generating an IPv6 address dynamically, according to the stored node
information.

Evidence Appendix to Appeal Brief Under Rule 41.37(c)(1)(ix)

There is no evidence being relied upon by Appellants in the appeal.

Related Proceedings Appendix to Appeal Brief Under Rule 41.37(c)(1)(x)

There are no related proceedings identified in the Appeal Brief, so no related proceeding decisions are submitted.